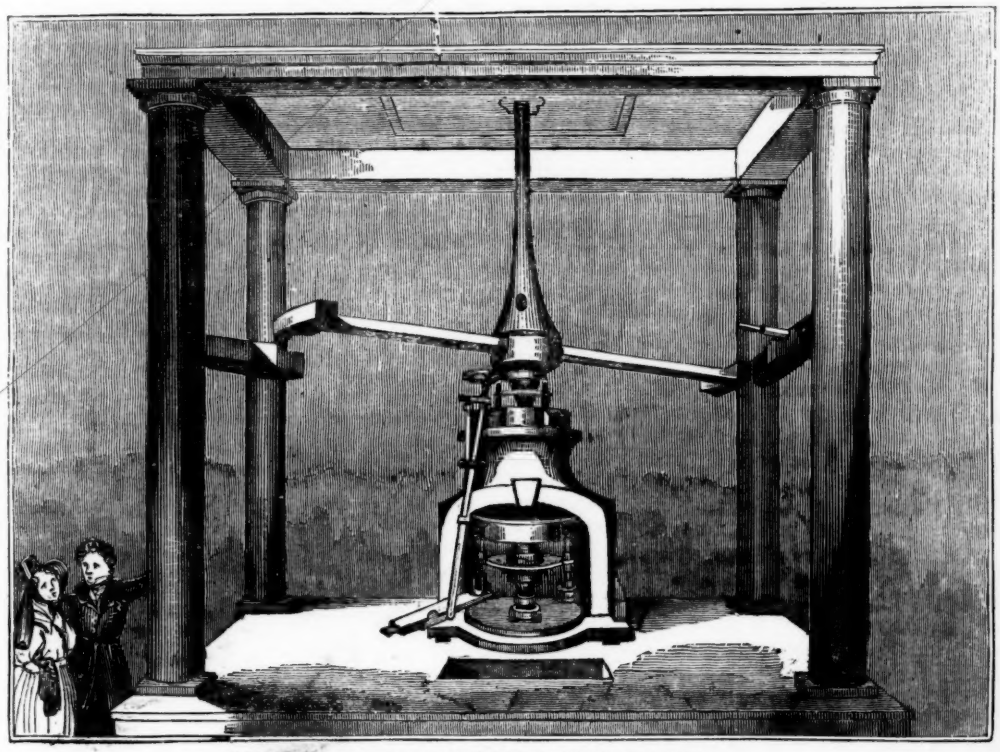
THE

Saturday Magazine.

No. 244. APRIL 23RD, 1836. Price One Penny

UNDER THE DIRECTION OF THE COMMITTEE OF GENERAL LITERATURE AND EDUCATION APPOINTED BY THE SOCIETY FOR PROMOTING CHRISTIAN KNOWLEDGE.

THE COINAGE OF MONEY. No. I.



COINING-PRESS IN THE ROYAL MINT OF LONDON.

The Coinage of Money.

The right of coining money has been always vested in the highest power of the country; and any infringement of this prerogative, either by debasing or imitating the coin of the realm, has constantly been visited by the severest punishment.

In modern times, the metals employed in the coinage are in general gold, silver, and copper; but among the ancients, we sometimes find an iron coinage mentioned.

We intend in this account to describe the methods employed in coining the gold and silver monies of England, at the Royal Mint of London, the only establishment in the British isles where it is coined by royal authority. In former times, the kings of England were in the habit of delegating their privilege of coining to the principal cities in the kingdom, and sometimes even to the higher dignitaries of the church; in these cases, the name of the mint from which the money issued was marked on the coins: a custom thus alluded to by an old poet:—

> The kynge's side salle be the hede, and his name writen,
> The croyce side what cite it was coyned and smitten.

The king in these cases received a certain sum called his *seignorage*.

The business of the English Mint had been managed until the reign of Edward the Second, by a class of men called *moneyers*, who contracted to coin the precious metals at a certain fixed rate by weight; these men employed others in the manufacture, giving them a stipulated share of the payments, and reserving the remainder to themselves as a profit on the transaction and a recompense for their risk and responsibility. At times they were heavily fined, and otherwise punished, when any fraud or error was detected in the coinage.

In the eighteenth year of Edward the Second, a number of superior officers were appointed to superintend the transactions of the mint. These were, a master, a warden and comptroller, a king's assay-master, a master's assay-master, and a king's clerk, besides several inferior officers. The establishment continued in this state until 1815, when it was placed on its present basis.

In regulating the coinage of the country, the current monies of the day have at times been called in. In 1661, during the reign of Charles the Second, the gold and silver coins of the Commonwealth were withdrawn from circulation. A re-coinage of silver took place in the reign of William and Mary,

to the amount of seven millions sterling. It was executed at several country mints, as well as at the mint of London. In 1774, a re-coinage of gold currency took place, the older money being so much worn. The same thing occurred, as regards gold and silver, in 1817. At this time, the guineas were taken out of circulation, and sovereigns substituted.

We shall now endeavour to describe the different processes of coining as they are practised at the mint, with the assistance of the splendid machinery invented in 1797, by Mr. Watt, of Soho.

The ingots of gold, when brought in to be coined, "are deposited with the master's assayer, and under the key of the deputy-master of the mint, where they remain until the assay-master has made an assay of each ingot separately." These ingots in general turn out of different degrees of fineness; the differences are very carefully noted, and the first-clerk and melter is required to *pot* the gold for melting;—this he does with the assistance of the assay-master's report,—placing in each pot such proportions of the ingots which are below the standard fineness, with other proportions of those which are above it, as will cause the pot when melted to be of the required standard.

When the gold is to be melted, the surveyor of the meltings is in attendance, and he carefully examines the whole, to see that the different marks agree with those in the *pot-book*.

The crucibles in which the gold is melted are formed of clay, containing a large portion of black lead. Before the gold is placed on the fire, the crucible is put into the furnace and allowed to become red-hot; it is then charged. When the metal is melted, it is well stirred with a stick of the same substance as the crucible, previously made red-hot. It takes about an hour to melt a crucible of gold, which weighs as much as from 80 to 100lbs.

The gold being melted, the crucible is removed from the furnace, and the contents are cast into two bars or ingots, ten inches long, seven inches wide, and one inch thick. One crucible, with proper management, can be used as much as eight or ten times in the course of the day. The bars of gold which are the produce of these meltings are again assayed, and if found to be of the proper standard, the king's assay-master authorizes their delivery to the moneyers for the purpose of coining.

Formerly, in melting silver, great difficulties occurred when a large quantity was melted at once, from the heat of the furnace oxidizing the alloy, and rendering the metal too fine; but these difficulties were ultimately overcome, and the new methods have been in use ever since 1811. In 1817, during the issue of the new coinage, as much as 10,000 lbs. weight of silver was melted in a day, for months together.

The first process performed by the moneyers is to flatten the bars, or roll them out between two polished steel rollers. The gold is rolled cold, but the silver is heated red hot, to facilitate the process. Another method is afterwards employed, which is more accurate; it consists in drawing the bars through steel moulds, decreasing gradually in size, in the same manner as the drawing of wire is performed.

The bars of metal, being now of the requisite thickness, are carried to the cutting-out presses; of these there are twelve arranged in a circle, with an iron column between each; here the metal is cut into round pieces of the size required, by means of a steel punch. The whole of the twelve presses can be worked at the same time, by means of a large cogged wheel, connected with a steam-engine. The cutting-out press was invented by Matthew Boulton, of Soho, in 1790, and is so ingeniously contrived, that only one boy is required at each press, for the purpose of feeding the machine,—that is, supplying it with the flatted gold.

The circular pieces of metal, technically called *blanks*, are then taken to the sizing-room, where those which are too light are rejected, and sent to be re-melted, while those which are overweight are filed, or rasped, until they are correct.

The flatting, or drawing, has so hardened the metal as to render it unfit to receive the impression properly; the whole of the *blanks* are, therefore, made red hot, and are afterwards boiled in very much diluted sulphuric acid.

The next operation is milling; the annexed engraving will explain the manner in which this is accomplished. The engraving is a plan of the machine, looking down upon it; it is fixed on a table, about four feet high, and acts in the following manner; D is a bar of hardened steel, engraved upon its edge, in this manner ·····; this bar can be adjusted by means of the two screws, F G, but is immoveably fixed when the machine is in action; C is another hardened steel bar, engraved in the same manner as D, but double the width, one half being cut into teeth, like a rack; this is moved along with a sliding motion, by means of the wheel B, the teeth of which work in those on the bar; the *blanks* are placed on the

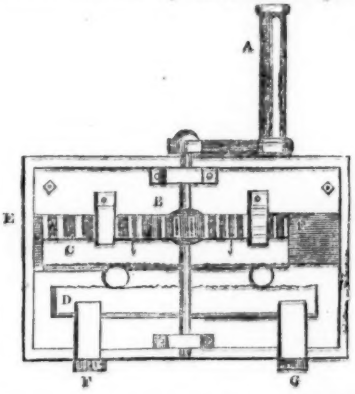
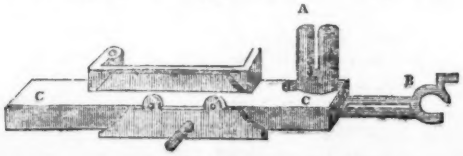


table between the engraved edges of the two bars; when the handle is turned they acquire a rolling motion, and the milling is effected by the edges of the bars. A man is employed in turning the handle, and a boy in feeding the machine, so that two blanks are kept constantly between the bars.

The engraving at the head of this paper represents one of the coining-presses; these are worked by steam. There are eight of these presses, and the average number of blanks which they can coin is about sixty each per minute, so that when all are at work, they can produce nearly three hundred thousand pieces in a day, merely requiring the attendance of a boy at each press to supply it with blanks. The manner in which these presses act is so similar to those in common use for striking dies, as to require no description; the engraving sufficiently explains itself, with the exception of one part of the mechanism, by which the press is supplied with fresh blanks and



the coins removed. This is called the *hopper*; the engraving shows it detached from the engine:—A is a

receptacle which the boy keeps constantly supplied with blanks; B is a sliding bar, which continually retreating and advancing, by means of machinery with which it is connected, fetches from the receptacle A at each movement a fresh blank, which it carries forward and drops upon the die, removing, at the same time, the coin which was last struck, which drops into a box prepared to receive it.

The coining part of the process is under the superintendence of the surveyor of the money-presses. The money when struck is inspected under his directions, and passed through tubes of the diameter of the different species, and this readily detects any which may have been improperly struck. The moneyers can only coin in his presence, as he has every press under lock and key. The money, after being examined, is weighed up into *journey weights*,—fifteen pounds of gold, or thirty pounds weight of silver. But before it is put into circulation it has to pass through another ordeal, namely, the trial by *pix*; an account of this, and of the methods resorted to in preparing the dies, we shall reserve for another paper.

A TALE OF THE INDIAN WARS.

Thrice is he armed who has his quarrel just—SHAKSPEARE.

DURING the war in India against the Mahrattas, a truce or peace having been concluded, Sir David Ochterlony, and about a thousand men, chiefly natives, under his command, marched through the country, supposing themselves, for the time being at least, at peace with all men. One evening, soon after they had encamped for the night, about twenty thousand Mahrattas appeared before them, in a position which evidently showed their intentions to be hostile, notwithstanding the recent truce. To the right of the British was a large tank, to the left a town, and in the rear a ruined mud fort, so that they could only be attacked in front. Sir David immediately assembled a council of war, composed of his officers, both native and British, and it was soon determined that they should take possession of the mud fort, and hold out as long as they could against the treacherous Mahrattas, the bad faith of whose chief was well known to them. In the mean time they had sent to the adjoining town for provisions, which, though not refused, were not furnished, and Sir David was obliged to march with his troops into the town, and seize upon some rice and other articles. On their way to the town, they found carts, and various other things, placed with a design to interrupt their progress, and as they returned they were pursued by three battalions of Mahratta infantry. Sir David Ochterlony being in the rear, ordered some of his men to proceed to the fort, and then with the remainder turning round and facing the enemy, he boldly reproached them with their treachery. The cowardly Mahrattas, astounded at the courageous bearing of the British commander, slunk away, and Sir David and his men were then in possession of the mud fort, with a very scanty supply of provisions, which were soon consumed.

Some messengers, whom they had despatched to Lord Lake for assistance, were intercepted, and returned with their noses or ears cut off, the provisions were all consumed, and the soldiers were gradually reduced by famine to such a state of weakness, that they begged to remain on guard beyond their proper time, rather than undergo the exertion of descending from the ramparts. In this trying emergency the native soldiers came forward nobly, and said, "We have eaten of the Company's salt*; we will never desert its interests, neither will we flee before yon cowardly Mahrattas. Our provisions are exhausted, but we know that when we are dead, our families will not be left destitute and unprotected, but will be provided for by the Company: your lives may be preserved by a means which our religion forbids us to use; you can kill the gun-oxen†, and thus obtain food." A generous contest succeeded.—"No," said Sir David, "we are fellow-sufferers, and we will share the same fate; we will never, at such a moment as this, save our lives by means so contrary to your religious feelings,—our fate shall be the same."

After remaining in this state of inaction and starvation for nearly another week, one of the officers, looking through the chinks of the door, saw something moving among the sugar-canes, which grew nearly close to the fort. He immediately called another officer; they both looked, and soon saw a hand waving in a friendly manner among the canes. The officer who first made the discovery wished to go out of the fort; his friend vainly endeavoured to dissuade him, saying it might be a spy; the officer persisted. As he left the gates, several shots were fired at him from the town, but he continued to advance towards the sugar-canes, and shortly a half-naked being rushed into his arms, saying, "Lake is coming!" and then fell to the ground, faint and exhausted. The officer immediately retreated into the fort, carrying the man in his arms in a state of insensibility; water was procured, and the poor creature, after taking a little, recovered his senses, but food they had none to offer him. On being asked what motive had induced him to exert himself so much in their favour, the Indian simply replied, "I am the son of a farmer, who resides about ten miles from this place; I had often heard of the English, but had never seen them; I told my father that I had heard some English were in the neighbourhood, and I wished to take the opportunity of seeing the white men; he refused to let me go, but I escaped, and reached the Mahratta camp. On asking the Mahrattas to show me some Englishmen; they showed me the old mud fort, and there amongst the native soldiers I could perceive several English. I asked the strength of the English; they replied, 'they are one thousand strong, but we are twenty thousand, and, therefore, their fate is fixed.' What, thought I, dare one thousand men in such a ruined fort hold out against twenty thousand! Men like those shall never fall into the hands of the treacherous and cowardly Mahrattas; I will inform their great commander, Lord Lake, of their danger! I have been to him,—have informed him of your distressed situation, and he will be here to-morrow!"

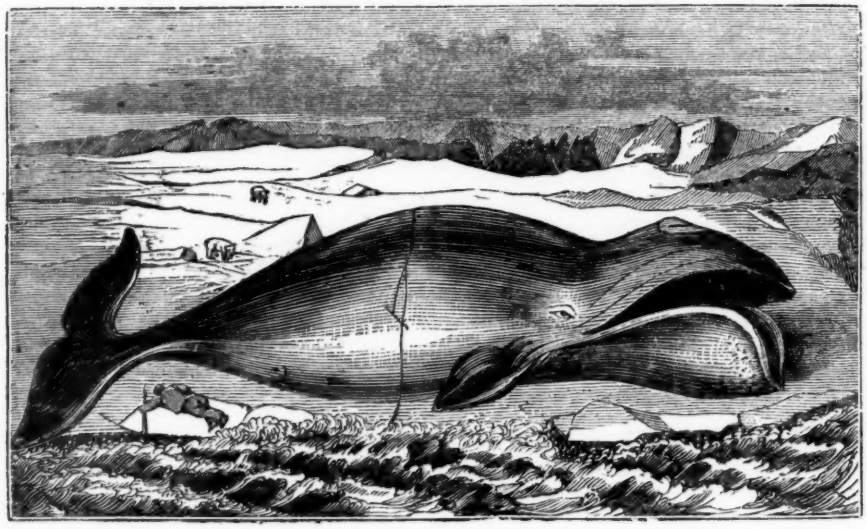
This poor Indian, in the fulfilment of his amiable determination, had actually walked one hundred and twenty miles without stopping to rest‡, and scarcely allowing himself time to eat on the road. Lord Lake did arrive the next day; and as soon as the Mahrattas heard the sound of the drums which announced his approach, they took to flight. The generous Indian was ennobled, and had three villages given to him, in reward for his services, his heroism, and his sufferings.

* "We have eaten of the Company's salt." To eat of the salt, &c., is an eastern phrase, meaning to partake of the hospitality, &c.

† Animals sacred to natives of India.

‡ Walking one hundred and twenty miles, without stopping to rest is no uncommon thing amongst the Indians who are employed as messengers.

THE WHALE FISHERY.



THE COMMON GREENLAND WHALE.

THE USEFUL ARTS. No. XXVIII.

THE WHALE FISHERY.

THE increasing use of gas, for the purposes of illumination, has so reduced this fishery, as to render it of comparatively minor importance in a commercial point of view. But it is not always by the pounds, shillings, and pence profit that we are to estimate the value of *all* employments of talent and capital. When we consider the increased knowledge we have obtained of the physical geography, natural productions, and meteorological phenomena of the Arctic regions, mainly through the Whale-fishery, it must ever be a source of interest to us. Independently, also, of the still-existing demand for the various products of these high northern latitudes, the hazardous and precarious nature of it, and the daring and talent requisite for its pursuit, invest it with a charm which will ever induce men to engage in this occupation even with less hope of profit than they might reasonably indulge, when pursuing surer, but less-exciting sources of gain.

The circumstances just alluded to render every account of this fishery so interesting, that there are few who are not acquainted with its general features; for the purpose, therefore of giving novelty to ours, we shall waive entering into any statistical details, or general descriptions, and give a fictitious history* of a whaling voyage, in which the principal characteristics of this occupation will be embodied.

The ship Endeavour, of 370 tons, sailed from Whitby in March 183—, amply provided with every necessary for the object of her voyage and for the comfort of her crew. She was well *doubled* and *fortified*, that is, she had extra planking on her frame, and was strengthened at her bows, interiorly by additional timbers, and outwardly by iron-plates, &c., to enable her to resist the tremendous pressure of the ice in which she might be enclosed. She was so rigged as to admit of rapid and easy manœuvreing, it frequently happening that but a few men are left on board at a time, when every resource of skilful navigation must be employed either to keep in sight of the boats, or to avoid impending danger from ice.

Her first destination was the harbour of Lerwick in the mainland of the Shetland Isles, where most Whalers stop for the purpose of completing their complement of hands, of receiving their final equipment of stores, and of making several arrangements for their ulterior object, such as taking down all useless appendages to the masts and rigging, and setting up a crow's nest†.

Having completed these preparations, the Endeavour finally sailed on the 3rd of April with a favourable wind, and proceeded on her course for Davis's Straits. The locality for the fishery having been recently changed in consequence of the animal being driven by so long a period of persecution, to abandon its haunts off the eastern coast of Greenland and the neighbouring seas, while the fact of its still abounding in Baffin's Bay had been ascertained by the several voyages of discovery made in that region within the last fifteen or twenty years.

As soon as they had arrived in the latitude where they expected to meet with *fish*, the boats were got in readiness for instant use, and every preparation made for action.

The boats were arranged three on each side, and slung from the davits, so that any one, or all, could be lowered in a minute, on a signal being given that a Whale was in sight. The Whale-boat is from twenty-four to thirty feet in length; it is built to unite the properties of being easily managed and rowed with speed, and yet to endure considerable strain and heavy seas. A boat's crew consists of seven or nine men, and carries from seven to eight hundred weight of whale-lines and implements: the boats are broad in proportion, to resist the effort of the animal when diving, which would otherwise drag them under water, an accident of not uncommon occurrence notwithstanding.

Each boat, when equipped for use, is provided with two harpoons, six or eight lances, and five or seven oars; a small flag to be set up at the stern as a signal when a

* All the details are taken from Captain Scoresby's work, and from an account of *A Voyage to Spitzbergen*, by John Laing, 1818; a gentleman who sailed with that officer, as surgeon, on more than one expedition. We have also had recourse to the *Account of Newfoundland, &c.*, by Louis Am. Anstrach; and several other works.

† The crow's-nest is a cylindrical frame about four and a half feet long, and two and a half in diameter, covered with canvass, open at top, and having a planked bottom, with a trap-hole left in it, by which the nest is entered. It is fixed to the top-gallant mast-head, and is intended to screen the person looking out, from the fatal effects of a Northern blast. It is necessary to station some one in such a situation when among ice, as a ship can only make her way through, or avoid coming into collision with it, by taking advantage of every movement among the distant masses; and it is from such a commanding height alone that these can be seen in time enough to allow of the proper manœuvreing. Added to which, the Whales, being sooner seen from the crow's-nest at a greater distance, preparations for their pursuit can be made in time.

Hence, every one on board takes his turn of watch, and has to pass several hours in this situation with, perhaps, a north-easterly wind blowing hard, and the thermometer from fifteen to twenty degrees, or more, below the freezing-point; when, if it were not for such a shelter, not all his ardour or resolution could preserve him from death.

The Crow's-nest is provided with a seat, and recesses to hold telescopes, a speaking-trumpet, signal-flags, a rifle, with its ammunition, and lastly, with a moveable screen, which can be shifted round the top to keep the wind from the observer's head, which must be exposed above the canvass shelter, while he is looking out. The use of the trumpet, signals, and telescope, will be easily comprehended; but our readers may not so soon conjecture that of the fowling-piece, in a situation where the most keen sportsman could not hope to employ it on game of the usual kind. The fact is, that from this elevation, a Narwhal may be seen and shot at, which might escape observation from the deck, or which could not be hit from the lower level, partly owing to the effectual resistance water presents to a ball fired into it so obliquely, and partly to the deception occasioned by refraction, under the same circumstances.

Whale is struck, a *tail-knife** used for cutting the fins of a dead Whale; a rest, on which the harpoon is laid to be ready for instant service; an axe, to sever the line if necessary; a small bucket for baling the boat and holding water to wet the running line, to prevent the friction from setting the boat on fire; a grapnel, boat-hooks, snow-shovel, and a few other articles. The largest boats are also furnished with a small windlass fixed across the thwarts for the purpose of winding up the line which has been carried out by a Whale, after the animal is killed. Sometimes a harpoon-gun for discharging the weapon from is used, this being a short gun mounted on a swivel near the bows of the boat; but it is by no means generally used, even in the best appointed vessels.

The harpoon is prepared for use by having a piece of rope eight or nine yards long spliced round the shank, the swelling of which, made to receive the handle or *stock*, keeps the rope from slipping off. The other end of this rope is made fast to the stock, which being put into the shank with sufficient firmness to retain its place during the cast, is nevertheless shaken out by the motions of the wounded Whale. The object of this arrangement is that the hold of the barbed harpoon may not be endangered by the motion of a long lever like the stock, and this latter, by being fastened to the harpoon, helps to indicate the situation of the Whale beneath the water, as it floats on the surface and is not lost.

Every harpoon is stamped with the name of the ship, that in case the Whale gets away and the harpoon is recovered by some other vessel taking the animal, the right of ownership may be determined. After these preliminaries the point and barbs are cleaned and sharpened, and covered with canvass or oiled paper to preserve it so till it is put into the boat and attached to the line for immediate use. A weapon thus prepared is said to be *spanned in*.

The Whale-lines are made of the best hemp and in the most careful manner. They are about three-quarters of an inch in diameter, and are in lengths of 120 fathoms, six of which spliced together are put on board each boat, making a total length of 4320 yards. The harpoon being attached at one end, the rest of the line is coiled with the utmost regularity in the compartments of the boat, and the end is provided with an eye or loop, to allow of another length being added on from another boat if necessary.

The Whales are most abundant about the month of June, and though found in every situation, the largest are generally met with near the edges of fields, floes, or packs† of ice.

There are two species of Whales met with in the Arctic seas. The *Balæna mysticetus*, or common Greenland Whale, averages from fifty-five to sixty feet in length, and about thirty or forty in girth; its skin is smooth and dark-coloured; the tail, though short, is often twenty or twenty-five feet broad; the head is enormously large, and has no neck; the upper jaw is furnished with a series of laminæ, attached to the bone, instead of teeth. These, which are the whale-bone of commerce, are fringed at their lower extremity with hair, and form, when the animal partly closes its mouth, a kind of screen, or sieve, which allows the exit of the water, but retains the small molluscous animals and fish which it drew into the cavity, and which constitute its food. The eye is disproportionately small, not much exceeding that of an ox; yet the animal possesses a tolerably good sight, and its hearing is described by Captain Scoresby as not so dull as we might be led to imagine, from the total want of any external appearance of that organ.

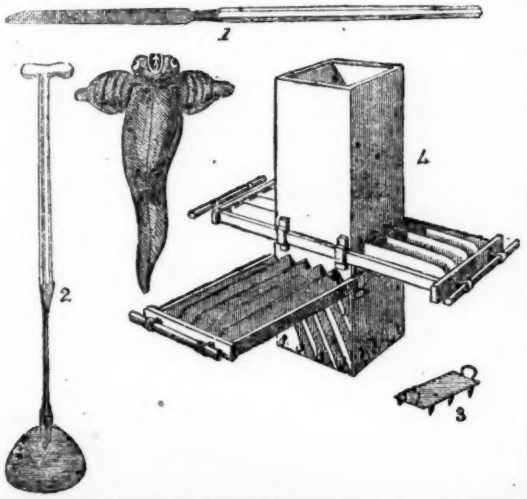
The other species is the *Balæna physalis*, called the *Razor-back* by the whalers, from a horny crest running along the back; it is a larger animal, often attaining ninety feet in length; much more active, and consequently more difficult to take, and is not so productive in blubber as the former species.

* The tail-knife is shown in the annexed cut,; it is about three feet long.

2. is a *blubber-spade*, used in detaching the blubber from the body in the process hereafter described. Every ship is provided with several forms and sizes of these spades.

3. is the *spur* which the men fix on to the sole of their shoes, to prevent them from slipping when standing on the Whale.

4. is a recently invented apparatus for cutting blubber into small pieces to pack in the casks. The cross sets of knives, being worked backwards and forwards, mince up the masses put in at the top of the chest,—a canvass funnel leading down into the hold, is hooked on at the bottom, and being put to the bung-hole of each cask in succession, the pieces fall in.



The small molluscous animal *Clio borealis*, which constitutes the principal food of the Whale in the Northern seas, is here shown of its natural size

† A *field* of ice, is a continued mass of it, so extensive that its bounds cannot be seen from the mast-head. A *floe*, is a smaller field, not exceeding half a mile or a mile in extent. When it is met with in smaller pieces it is termed *drift* ice, and when drift ice floats, adhering together for a great extent, the whole is termed a *pack*: *open* or *sailing* ice admits of a vessel or boat making its way through it without difficulty.

It is obviously impossible to enumerate the amount of the individual living creatures which are always existing in our globe, and partaking of its produce in some way or other, yet so admirably are the whole placed and disposed, and the size and movement of each, so carefully regulated and adapted to us and to each other, that we are neither disturbed by the number, nor even conscious of it. There is no crowding, no confusion; the enormous amount is nowhere visible to our sense. We must search it out in order to know it. We must calculate from what we can observe, before we can perceive or believe the ever-palpable but unobtrusive truth. What but an all-mighty and all-adjusting sagacity, infinitely beyond the highest expansions of human genius, could have arranged such inexpressible multitudes of living, sentient, and ever-moving beings into positions, limitations, and habits so wisely appropriated to each, so productive of comfort to every one, and yet so conservative of the harmony, the order, and the general welfare of the immense and multiform whole.—Sharon Turner.

A celebrated voyager once saw a stream of Stormy Petrels, which was from fifty to eighty yards deep, and three hundred yards or more broad. The birds were not scattered, but flying as compactly as the full movements of their wings seemed to allow; and this stream of petrels for an hour and half continued to pass without intermission, at a rate little inferior to the swiftness of the pigeon. It is calculated that the number of Petrels would amount to one hundred and fifty-one millions and a half.

Quills are taken from the wings of ravens, swans, turkeys, and peacocks, as well as geese, and in some parts of the world the people write with reeds, particularly the Turks, Moors, and other inhabitants of the East. When the word pen occurs in our English translation of the Old and New Testament, we must not understand it of a pen made of a quill, but of an iron style, or a reed, with which the ancients wrote. The iron style was sharp at one end, like a pointed needle, to write with, and at the other blunt and broad, to scratch out what was written and not approved of. Goose-quills are supposed to have been in use among us between four and five hundred years, and many of the quills used in England come from Hudson's Bay, Hamburgh, and Ireland.—*Cressingham Rectory.*

Is it not remarkable, that the same temper of weather which raises a genial warmth in animals, should cover the trees with leaves, and the fields with grass, for their security and concealment, and produce such infinite swarms of insects for the support and sustenance of their respective broods?—Addison.

INTRODUCTION OF CHRISTIANITY INTO ENGLAND.

WHEN GREGORY, honourably distinguished among Popes as the Great, thought of extending the influence of his authority in a western direction, Britain presented an inviting field. Her ancient Church, which in better days would probably have spurned any Roman attempt at interference, had been miserably curtailed by the Saxon conquest, in importance and extent. An auspicious opening was now offered, by means of Ethelbert and his Christian spouse, Bertha, for raising on its ruins a new ecclesiastical establishment. Gregory was well aware of these advantages, and judiciously determined upon improving them. His determination is referred, by the earliest of our Church historians, to an impulse from on high. Nor is this view unreasonable. Providence, undoubtedly, often acts upon the minds of men, and orders their affairs, to further its own benevolent designs.

Political motives for Gregory's generous enterprise were not likely to be assigned, at any time, by those who deeply venerated the see of Rome. A garrulous and wonder-loving age could not refer it even to heavenly motions, without making them depend upon a striking incident. In Bede, accordingly, after Gregory's history is finished, and his epitaph recorded, appears the following tale.

While yet a private clergyman, this famous Pontiff was one day passing through the slave-market of his native city. There his eye was forcibly arrested by some light-haired, fair-complexioned youths, who stood exposed for sale. "Whence come these lads?" he asked. "From Britain," was the answer. "Are the people Christians there?" he then inquired. "No: Pagans," he was told. "Alas!" he said, "how grievous is it, that faces fair as these should own subjection to the swarthy devil!"

His next question was, "What do you call the tribe from which these young people spring?" "ANGLES:" said the dealer. "Ah! that is well," the future Pope rejoined. "*Angels* they are in countenance, and copies of angels they ought to be. Where in Britain do their kindred live?" "In Deira," was the reply. "Well again," Gregory said; "it is our duty to deliver them from *God's ire!* Pray who is king of the land so significantly named?" "ELLA," replied the merchant. "Ah!" the pious inquirer added, "*Alleluiah* must be sung in that man's country." Fired by this occurrence, Gregory resolved upon undertaking personally a mission into Anglia.

Nor did the pope discourage his intention; but the Roman people would not allow their highly-valued fellow-citizen to enter upon a labour so remote and perilous. Thus Gregory is exhibited as bringing to the pontificate those benevolent intentions towards pagan Anglia, which were eventually realized under his direction. It is at least certain, that after his elevation he directed a priest named Candidus to buy some English lads of seventeen or eighteen, for education, as missionaries among their countrymen.

The prospect, however, of evangelizing Britain by means of young people to be educated expressly for the purpose, being distant and uncertain, Gregory's honourable zeal impelled him to think of a more expeditious source. He accordingly selected Augustine, prior of the monastery of St. Martin, in Rome, as leader of a devoted band, willing to attempt at once the conversion which he so anxiously desired. Augustine, having engaged several monks as partners in his toils, left the ancient capital of Europe, and made his first considerable halt among the monastic recluses of Lerins. To these devotees the difficulties of his undertaking were necessarily better known than they could have been at Rome.

At Lerins, accordingly, becoming utterly discouraged, he determined upon applying for Gregory's leave to withdraw from an enterprise apparently so hazardous and hopeless. But the pontiff would hear nothing of this despondence. He rebuked the missionary's pusillanimity, refused to cancel his obligations, and commanded him to lose no time in reaching Britain, fully relying upon God's protection and support. Augustine now rallied his spirits, proceeded northwards, and providing himself with interpreters in Gaul, set sail for the chalky cliffs of Kent. He landed in the Isle of Thanet, and thence despatched a messenger to Ethelbert, informing him of his arrival, and declaring that he had journeyed thus far from home in hope of showing him the way to heaven.

By the Kentish prince, however well the message might have pleased him, it was cautiously received. He gave no permission to his Roman guests for a further advance into the country, until he had gone himself to make observations. Augustine's arrangements for this royal visit did honour to his knowledge of human nature. Forming a procession of his monks, one of whom bore a silver cross, another a picture of the Saviour, while the remainder chanted litanies, he came forward into the *Bretwalda's** presence. Ethelbert might really have felt some fears of magic. At all events, there were those around him who would hardly fail of expressing such apprehensions, and an appearance of over-haste in approving the Roman mission seemed, probably, very far from politic. Augustine's first reception, accordingly, was in the open air; magic arts being thus considered less likely to take effect. The prior explained his object as no other than an anxious wish for guiding the king, and all around him, to those everlasting joys above, which it was the privilege of his ministry to promise on conversion. "Fair words and promises are these," Ethelbert replied; "but being also new and uncertain, I cannot relinquish for them principles long and universally professed among my countrymen. Your distant pilgrimage, however, and your charitable purpose of communicating to us what seems of surpassing excellence to yourselves, justly claim our hospitality. I shall, therefore, provide you with a residence, and the means of living. Nor do I restrain you from endeavours to spread your opinions among my people."

The residence provided was at Canterbury†, and the missionaries entered that city to take possession of it, with all the imposing solemnities of the cross, the picture, and the chanted litany, which had dignified their introduction to the Bretwalda. Of their speedy success there are abundant assurances. Ethelbert, probably long a concealed Christian, seems to have openly professed himself a convert soon after their arrival. Nor, obviously, could such an example fail of operating extensively upon the people.

[SOAMES' *History of the Anglo-Saxon Church.*]

* The Saxon title for their princes.

† See *Saturday Magazine*, Vol. II., p. 138.

IT IS worth while to consider the force of dress; and how the persons of one age differ from those of another, merely by that only. One may observe also, that the general fashion of one age has been followed by one particular set of people in another. Thus the vast jetting coat and small bonnet, which was the habit in Henry the Seventh's time, is kept on in the yeomen of the guard; not without a good and politic view, because they look a foot taller, and a foot and a half broader: besides, that the cap leaves the face expanded, and consequently more terrible, and fitter to stand at the entrance of palaces.—STEELE.

THE GASTRIC JUICE, AND ITS USES IN DIGESTION.

THE gastric juice is called the chemical part of our frame; but by reason of the imperfection of our chemistry, no distinct knowledge of it has yet been attained; at least not a knowledge, in degree or kind, similar to that which anatomists possess, of the mechanical part of our frame.

The gastric juice is the liquor which digests the food in the stomachs of animals. Of all liquors, it is the most active, the most universal agent. The flesh of, perhaps, all animals; the seeds and fruits of the greatest number of plants; the roots, and stalks, and leaves of many, hard and tough as they are, yield to its powerful pervasion. The change wrought by it is different from any chemical solution which chemists can produce, or with which they are acquainted, and in this respect, as well as many others, that in our chemistry, particular liquids act only on particular substances. The many remarkable properties of the gastric juice have caused it to be sometimes called the chemical wonder of animal nature.

It is observed by anatomists, that a general relation subsists between the external organs of an animal, by which it procures its food, and the internal powers by which it digests it. Birds of prey, by their talons and beaks, are qualified to seize and devour many species, both of other birds and of quadrupeds. The constitution of the stomach agrees exactly with the form of the members. The gastric juice of a bird of prey, of an owl, a falcon, or a kite, acts upon the animal fibre alone,—it will not act upon seeds or grasses at all. The formation of the mouth of the ox or the sheep is suited for browsing upon herbage. Nothing about these animals is fitted for the pursuit of living prey. It has been found by experiments, tried a few years ago, that the gastric juice of ruminating animals, such as the sheep and the ox, speedily dissolves vegetables, but makes no impression upon animal bodies. No person can attentively observe the structure of animals, plants, or any part of the Creation, without being struck with the design and contrivance displayed in the arrangement and adaptation of the different parts to each other.

The more we become acquainted with the works of God, the more we feel, that the subjects of praise and admiration are inexhaustible.

The Psalmist has represented the Almighty as saying, "Every beast of the forest is mine, and the cattle upon a thousand hills. I know all the fowls of the mountains, and the wild beasts of the field are mine." Let us imitate the devout admiration of David, and say, "O Lord, how manifold are thy works! in wisdom hast thou made them all; the earth is full of thy riches."—*Cressingham Rectory.*

WHAT can we call the principle, which directs every different kind of bird to observe a particular plan in the structure of its nest, and directs all the same species to work after the same model! It cannot be imitation; for though you hatch a crow under a hen, and never let it see any of the works of its own kind, the nest it makes shall be the same, to the laying of a stick, with all the other nests of the same species. It cannot be reason; for were animals endued with it to as great a degree as man, their buildings would be as different as ours, according to the different conveniences that they would propose to themselves.—ADDISON.

AN Indian forest is the most picturesque scene that can be imagined. The trees seem perfectly animated. The fantastic monkeys give life to the stronger branches, and the weaker sprays wave over your head, charged with vocal and various plumed inhabitants.—PENNANT.

SOAP-WORT, (*Saponaria officinalis.*)

THERE are plants in the world whose juices may be used, like Soap, for the purposes of cleansing. Several sorts of them are found growing in Arabia, Syria, Asia Minor, and Spain, and in the southern part of Italy. The most remarkable of these kinds of plants is the Soap-wort. It grows in England and Switzerland in abundance. It rises to the height of three feet, and is about as large as a goose-quill. The leaves are lance-shaped, and are attached to the stalk in pairs opposite to each other. From the little hollow, which is formed by the union of the leaf with the stalk, come out flowers of a lilac colour, grouped together, but growing on separate footstalks. In the Alps, sheep, before shearing, are washed with soap-suds made from this plant, by boiling both the plant and its root for some time in water. If ashes are added, it will clean linen. Even without boiling, if the plant is steeped in water for several days, it imparts its soapy properties. If you take twenty horse-chestnuts, the fruit of *Æsculus hippocastanum*, and rasp them in five or six gallons of water, then add a very little common soap, it is particularly useful in cleaning anything of the hempen kind.

The juice of the leaves of the Agavè is a well-known substitute for soap in the West Indies. The juice is pressed out by passing the leaves between rollers; it is then exposed to the rays of the sun, in wide shallow vessels, till it becomes thick, and when mixed with ley-ashes, is made up into balls.

It is better than common soap,—for it forms suds or lather, when mixed with sea-water.

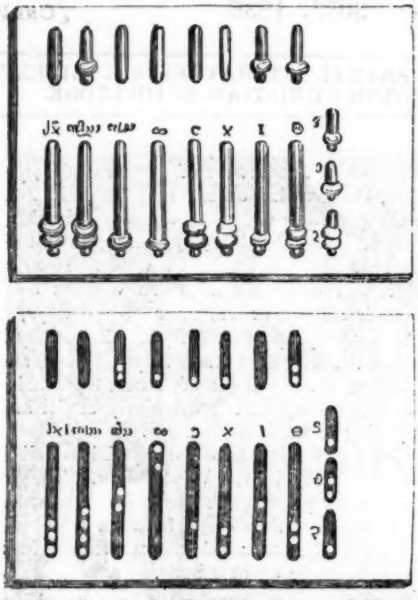
MECHANICAL ARITHMETIC.

BEFORE the invention of figures and the rules of arithmetic, the addition, subtraction, and multiplication of quantities, were performed by various mechanical and other contrivances.

In ancient Greece, the rudiments of calculation were taught by the assistance of what was named an Abacus; a flat board, surrounded by a rim, and forming a kind of shallow box, marked or divided by lines, and a number of pebbles, counters, or pieces of coin, which, by being placed in different situations, were considered as representing different numbers. This board was also, at times, strewed with sand, for the purpose of being employed in tracing on it various geometrical figures, in the same manner as the sand-boards are used in our national schools in teaching writing.

Among the Romans we find the same instrument in use, but much improved in appearance. The two engravings represent the Abacus of the Romans, of two different forms. The first is a board with two rows of metal wires or hooks, on which pierced counters, or beads were placed, so as to represent different amounts or sums of figures. The second board is carved with two series of grooves, and the counters used seem to be something like boys' marbles. To the Roman school-boy a bag of marbles was of as much service in the school-room as in the play-ground. If a bead was placed on the second long bar, counting from the right, it implied 1; if on the third, 10; on the fourth, 100; and so on to 1,000, 10,000, 100,000, or 1,000,000. If the beads were placed on the upper short bars, the value was five times as much as on the corresponding long bars; the first long and the first short bar on the right, related to weight, and one bead on the long wire meant one ounce, while one on the short wire above had six times the value, and meant six ounces. A bead on either of the very short bars to the right

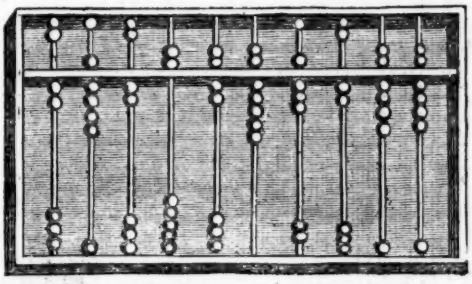
expressed a part of an ounce; on the first, half an ounce; on the second, a quarter; and on the third, a third part of an ounce. On the other Abacus, the value of the counters is the same, the round balls, already noticed, being used instead of beads.



In former times, the English Court of Exchequer had a contrivance, which in its arrangement much resembled the Abacus; it was called a *Saccarium*, and was in the form of a table, about ten feet long and five feet wide, surrounded by a ledge, about four inches high. It was covered every year after Easter with fresh black cloth, and was divided into compartments, about twelve inches square, by white lines, so as to have a chequered appearance, and from this circumstance arose the name of the Court of Exchequer. The table in the Court of Exchequer is to the present day covered with a chequered cloth. Round this table the judges and other officers were seated, the teller in the centre of one of its sides. Small coins appear to have been used instead of counters, which acquired different values according to the row of squares in which they were placed. On the lowest, each coin represented a penny; on the second, a shilling; on the third, a pound, and every succeeding place, (counting upwards,) imparted a value ten times higher than that below. This mode of calculating has been abolished in the Exchequer long since, but it is only of late years, that the mode of registering by tallies has been abolished in this court. These clumsy contrivances consisted of sticks of hazel or willow, squared at each end. The sum of money was marked on the side with notches by the cutter of tallies, and inscribed on both sides by the writer of tallies; the value of the notches was in proportion to their size, it was then cleft through the middle with a knife and mallet.

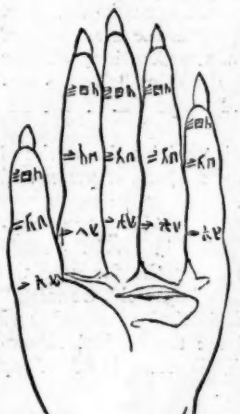
On the payment of a debt due to the king in the Exchequer Court, the tally which recorded this debt was delivered to the party paying it, and was then carried to another office, where a receipt on parchment was substituted for it. When, a few years ago, this antiquated practice was abolished, there remained in the offices of the Exchequer, a vast accumulation of these rude instruments of Arithmetic, which it was desirable to have destroyed. They were removed to some apartments in the House of Lords, and fires were made for the purpose of burning them; these fires are supposed to have extended to the building, and to this measure is attributed the total destruction of both Houses of the British Parliament, in the month of October, in the year 1834.

Among the contrivances of modern times, that which most resembles the Abacus is the Chinese Swan-pan. Like the Abacus it is a small board, surrounded by a ledge, and divided unequally into two compartments by a slip of wood. Across its narrowest diameter, ten slender slips of bamboo are placed, on which are strung a number of bone balls; two on each piece of bamboo in the upper compartment, and five in the lower. Its use is much the same as



that of the Abacus, but it is more comprehensive in its powers. It is in common use in China, and the Chinese are so dexterous in its management, that they can cast up long accounts by means of their Swan-pan as rapidly, and with as much accuracy as most of our merchants' clerks by their more improved system of arithmetic.

The next figure illustrates the palpable arithmetic, or arithmetic of the touch, which is extensively used by the natives of the East Indies and China, in their commercial transactions, not only among themselves, but also in their dealings with British and other merchants. Extensive bargains are struck without a single word passing between the parties, who, seated upon the ground, with their hands covered by a shawl, or by their robes, agree upon prices which are indicated by pressing the joints of their fingers.



Each joint of every finger has a separate value attached to it. The third joint of the little finger, being pressed outside, means 1; the second joint 2, the first joint 3; the first joint pressed in the front 4, the second 5, the third 6: the third joint pressed on the inside, 7, the second 8, the first 9. On the next finger, beginning at the outside of the third joint, we have 10, the second joint 20, and so on up one side of the finger, down the centre, and up the other side. 30, 40, &c. to 90; the joints of the middle finger pressed in the same order, mean 100, 200, &c.; the index finger 1000, 2000, &c.; and the thumb 10,000, 20,000, on to 90,000.

The above figure of a hand is copied from a Chinese work on Arithmetic, and is the more curious, as showing, in the rude art of that singular people, their love of unnaturally-long nails on the fingers, among them a sign of honourable distinction.

LONDON.
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PART PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.